

What we claim is :

1. A process which subjects a body of polymer to deformation to produce strain hardened polymeric products comprising blending a polymer and a nanoparticle to produce a polymeric composition, forming a film from the polymeric composition, and subjecting the composition to strain hardening.
2. The process of claim 1 wherein the polymer is selected from the group consisting of homopolymers and copolymers of polyolefins, polyamides, polyimides, polyesters, aliphatic polymers, amorphous polymers, crystallizing polymers, and blends, alloys, and combinations thereof.
3. The process of claim 1 wherein the nanoparticles are particles with at least one dimension in the nanoscale selected from the group consisting of spheres, particles of irregular geometry, sheets, foils, fibers, wires, tubes, or combinations thereof.
4. The process of claim 1 wherein the nanoparticles are selected from the group consisting of carbon nanoparticles, graphite nanoparticles, carbon nanotubes, graphite nanotubes, spherical nanoparticles, Bucky Balls, glassy nanoparticles, silica-based nanoparticles, nanoclays, substituted Montmorillonite, metal oxide nanoparticles, metal sulfide nanoparticles, metal nitride nanoparticles, metal complex nanoparticles, metal nanoparticles, metallic alloy nanoparticles, metallic alloy nanowires, metallic alloy nanospheres, metallic alloy nano-sized sheets, metallic alloy foils, colloidal nanoparticles, and mixtures thereof.
5. The process of claim 1 wherein the nanoparticles are substituted Montmorillonite.
6. The process of claim 1 wherein the nanoparticles are present in an amount of between 0.01% and 10% by volume based upon the volume of the polymer.
7. The process of claim 1 wherein the nanoparticle are present in an amount of between 0.1% and 10% by volume based upon the volume of the polymer.

8. The process of claim 1 wherein the nanoparticles are present in an amount of between 1% and 10% by volume based upon the volume of the polymer.
9. The process of claim 1 wherein the polymer composition is partially or completely molten when subjected to strain hardening.
10. A strain hardened polymeric product produced by the process of claim 1.